

ECONOMETRICS 1 cod 40270
BOCCONI UNIVERSITY
COURSE SYLLABUS
PROF N. LIMODIO – TA I. Kim Taveras
A.Y. 2025-26

This econometrics course provides an in-depth exploration of econometric theory and methods tailored for rigorous academic research. Students will develop proficiency in advanced econometric techniques applicable to both theoretical and empirical economic analysis. To reinforce learning, the course is complemented by problem sets that include theoretical exercises as well as empirical applications, allowing students to apply econometric techniques to real-world data and introduce these methods in their research skills.

The topics include but are not limited to:

- Classical Linear Regression Model
- Topics include: Gauss Markov Assumptions, Estimations procedures, Goodnes of Fit, Frisch-Waugh-Lovell Theorem, Finite Statistical Properties of the OLS Estimator, Asymptotic Statistical Properties of the OLS Estimator
- Hypothesis Testing
- Topics include: Concepts and Optimality, Exact Sample Hypothesis Testing, Asymptotic Hypothesis Testing, Asymptotic Hypothesis Testing MLE Estimator; Trinity of Classical Testing
- Generalized Linear Regression Model
- Identification: Endogeneity, Instrumental Variables, Reduced-form and Two Stage Least Squares, Testing for Validity of Instruments, Weak Instruments, Bad Controls
- GMM, 2SLS as GMM, Extremum Estimators and Consistency, Asymptotic Properties, Efficient GMM, Feasible Efficient GMM, Iterated GMM, Hausman Test and general theorem
- Program Evaluation, Counterfactual and Selection Bias, ATE, ATT and ITT, LATE and Instrumental Variable Interpretation, Sample Selection, Matching, Difference-in-Difference Models
- Panel Data, Types of Panels and Limitations, Random and non-Random attrition, Pooled OLS, Fixed Effects, Between Estimator, Random Effects, Approaches to Model Selection
- Recent Advances in Empirical Methods (staggered diff-in-diff, event study, contamination, clustering and more)

Students are encouraged to complement the slides and material provided through blackboard with the recommended textbooks. The edition of the textbooks are only indicative and newer, or older, versions are usable:

1. Angrist, Joshua D., and Jörn-Steffen Pischke. Mostly harmless econometrics: An empiricist's companion. Princeton university press, 2009.
2. Greene, W.H., Econometric Analysis, (6th edition), Pearson Prentice Hall, 2008
3. Davidson, R. and J.G. MacKinnon, Estimation and Inference in Econometrics, (1st edition), Oxford University Press, 1993
4. Wooldridge, Jeffrey M. Econometric analysis of cross section and panel data. MIT press, 2010.

5. Balgati, B., Econometric Analysis of Panel Data, 2021 Edition

The evaluation of the course will comprise of 5 problem sets, each worth at least 5% of the final grade, and an in-class, closed-book, exam which comprises for the remainder of the grade.